2010 Annual Performance Report
Summer of Innovation Pilot

Administered by the Space Grant Consortium Awardees (ID, NM, MA, and WY); Paragon TEC, Inc. (Contract Awardee) and Center Collaborations along with Evaluation and Assessment support by Abt Associates, Inc. and Booz Allen Hamilton
Type of Agreement: Cooperative Agreement (Space Grant Awardees), Contracts (Paragon TEC, Inc.; Abt Associate, Inc.; and Booz Allen Hamilton)

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PROJECT DESCRIPTION

The Summer of Innovation (SoI) is NASA's new initiative to use its out-of-this-world missions and technology programs to boost summer learning, particularly for underrepresented, underserved and underperforming students across the nation. SoI supports President Obama's Educate to Innovate campaign for excellence in science, technology, engineering and mathematics (STEM) education. It's a multi-faceted effort designed to engage students in STEM and improve STEM teaching and learning through partnership with federal agencies, academic and informal organizations, nonprofits, and industry. The project was piloted in Summer 2010 with out-of-school learning activities hosted by state education stakeholders, NASA Field Centers, and education partners. In addition to multi-week summer learning programs, NASA and SoI partners offered special events, teacher development, and family involvement activities.

Vision

- Inspire the nation with an innovative education program.
- Engage Americans in NASA's mission, and strengthen NASA and the nation's the future workforce.
- Serve as a catalyst to expand, align and strengthen existing state-based STEM learning networks.
- Maximize learning and development outcomes to keep students on pathways to learning and life success.
- Partner with organizations to ensure that summer learning experiences are available to all students.

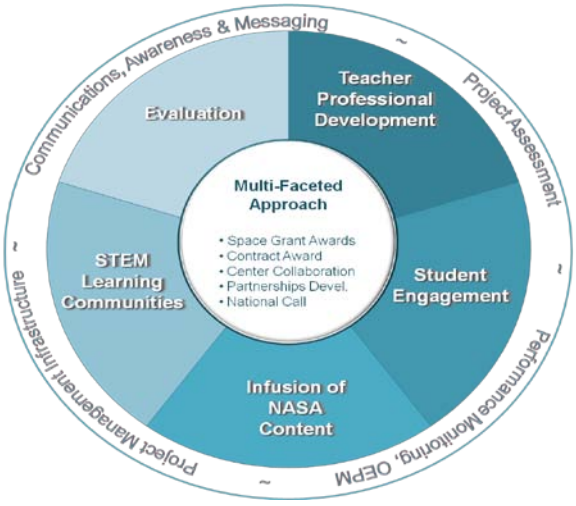
- Increase the chances that all children can meet high academic standards, achieve in school and succeed in the competitive 21st century global society.

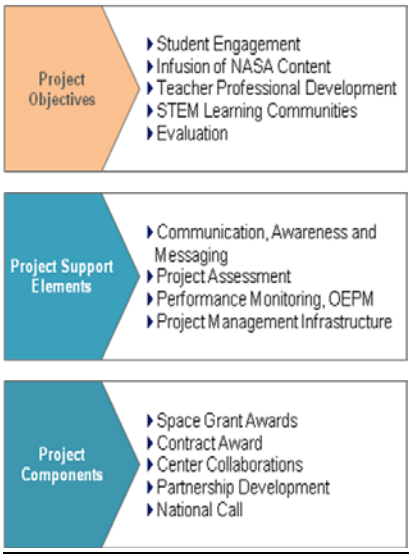
Pilot Project Goals

The goals are of the pilot project are as follows:

- Professional development and training opportunities for teachers who will lead students through the *Summer of Innovation* summer learning program.
- An intensive and interactive middle school education experience that accelerates student learning and improves student STEM skills and knowledge.
- Strategic infusion of NASA content and educational resource materials.
- A community of STEM education stakeholders that is able to sustain student interest and achievement.
- Assessments of effectiveness of *Summer of Innovation* interventions and the effectiveness of the STEM learning communities developed through this pilot.

Strategic Circle and Delivery Model





PROJECT BENEFIT TO OUTCOME 2

Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers and faculty.

The goals of the SoI Pilot Project align to Outcome 2 of the 2006 NASA Education Strategic Coordination Framework, working to "attract and retain students in STEM disciplines." SoI also supported the following objectives also aligned to Outcome 2:

Objective 2.1—Short Duration Professional Development
Provide short duration professional development and training opportunities to educators, equipping them with the skills and knowledge to attract and retain students in STEM disciplines.

Objective 2.2—Long Duration Professional Development
(Educate) Provide long-duration and/or sustained professional development training opportunities to educators that result in deeper content understanding and/or competence and confidence in teaching STEM disciplines.

Objective 2.3—Curriculum Support Resources
(Educate) Provide curricular support resources that use NASA themes and content to:

a) Enhance student skills and proficiency in STEM disciplines (Educate);
b) Inform students about STEM career skills and proficiency in STEM career opportunities (Engage); and
c) Communicate information about NASA's mission activities (Engage).

Objective 2.4—Student Opportunities
(Engage) Provide K-12 students with authentic first-hand opportunities to participate in NASA mission activities, thus inspiring interest in STEM disciplines and careers; and/or provide opportunities for family involvement in K-12 student learning in STEM areas.

In FY 2010, the SoI Pilot Project contributed to Outcome 2 and its objectives with the following accomplishments:

PROJECT ACCOMPLISHMENTS

- During SoI's pilot summer, sites reported successful student and educator activities notwithstanding the challenges posed by the pilot's ambitious time line. Sites reached a substantial number and diversity of students across the country, engaging them in the SoI activities. Participating teachers appreciated the opportunity to establish relationships with university faculty and learn about and use NASA content, with several making plans to integrate it in their classrooms during the school year.

  FY2010 Summer of Innovation Pilot Project Participant Data:

	Direct Student	Indirect Students	Outreach Students	Teachers	General Public
Totals	22,773	93,552	44,025	4,083	156,769

- Over 250 activities executed across the nation during the summer including collaborations by NASA Centers (i.e. Boys and Girls Clubs, Girls Inc., Science Centers and Universities)
- SoI helped to expand the availability of partnerships/resources in remote areas and underserved communities. Several sites commented that the pilot summer

helped build capacity for future efforts to reach into underserved communities and engage greater numbers of students and educators in STEM learning outside of the school year. As the Sub-Award site reported, during SoI FY2010, it built ***"new infrastructures, implementation procedures, and program models for many locations that didn't have any existing summer academic enrichment programs, thereby reaching students who would not have otherwise participated in summer STEM programming."***

- The implementation data, the national evaluation surveys, and reports from the sites all point to success in engaging students in a wide array of hands-on, inquiry and team-based activities. Several project developers described activities intended to ***"enrich"*** not ***"remediate,"*** and they generally succeeded in transforming scientific and engineering topics into meaningful activities. One site noted that, ***"The kids were part of the activities, not observers."***
- Collaborated with key stakeholders Office of Management & Budget (OMB) and Government Accountability Office (GAO) to established a project evaluation infrastructure
- Solidified collaboration with Federal Aviation Administration (FAA) and are in continuing discussions with other agencies including – Office of Science & Technology Policy (OSTP), Dept. of ED, Dept. of Energy and National Oceanic & Atmospheric Administration (NOAA)
- Defined Communication Strategy to enable project scalability
- Launched an interactive website with the capability for users to register and report SoI experiences (www.nasa.gov/soi)
- New Mexico (NM) Space Grant Consortium teamed up with the NM Science, Engineering, Math, and Aerospace Academy to offer students a summer ***"Launch and Learn"*** program. Students had hands-on experience to build small foam rockets, to make small planets that comprise the solar system, and to construct Mars rocks and vehicles as their science projects. The reach of the program impacted students in five states – New Mexico, Texas, Colorado, Arizona, and Maine. One parent remarked, ***"Our son had a chance to explore and experience science on a very intimate level beyond my imagination. My husband and I have been absolutely amazed with all the hands-on learning made available throughout the Launch and Learn program in such a short time span. He has truly gained a wealth of knowledge from this experience that will contribute to his academic journey."***
- Glenn Research Center collaborated with the Cincinnati Public Schools (CPS) district in Cincinnati, Ohio to provide unique NASA experiences and to infuse NASA content into their 5th Quarter Program, an innovative and strategic four-week, full-day extension of the school year project designed to improve students' academic achievement. The Science Curriculum Manager, for CPS commented that ***"The collaboration provided opportunities for our students to have access to NASA scientists and engineers through education demonstrations on aerospace technology, a space presentation by an astronaut and a panel on STEM careers. Additionally, NASA provided hands-on, minds-on project based aeronautics and rocketry activities that our volunteers from GE Aviation, a CPS partner, facilitated with students at South Avondale School."***

- Idaho Space Grant partnered with three different universities and a tribal college to serve underserved populations from three states – Idaho, Montana, and Utah. This partnership reached junior high students and teachers from tribal reservations as well as large migrant, Latino populations. Scientific and engineering topics were transformed into ***"play"*** through rocketry, robotics, cosmology, and Earth science. The parents of one of the students expressed the following sentiments, ***"[after the program, the son] looked forward to each and every single day, and has just now started talking with his parents about college and a possible future within NASA."***
- Captured Lessons Learned and Best Practices from out-of-school learning activities hosted by state education stakeholders, NASA Field Centers, and education partners
- Conducted a national evaluation of a sample of SoI Pilot Project activities
- Conducted an assessment on the implementation of the SoI Pilot Project, benchmarking study and developed Key Performance Indicators (KPIs) to inform future strategic planning for the project
- SoI has achieved national media attention (ex. CNN feature)
- Developed 3 Public Service Announcements (PSAs) with trust agents that reach underserved and underrepresented populations
- NASA was a major exhibitor at the USA Science and Engineering Festival being held on the National Mall in Washington, D.C. (October 23-24, 2010)
- Provided a SoI Pilot Project overview, highlights and How to Access NASA Resources presentation at the National Summer Learning Association (NSLA) National Conference (November 9, 2010)

For the students and their families and educators, the Summer of Innovation has brought greater interest and excitement in STEM disciplines and with NASA. Summer of Innovation is important to the country because it will help to prepare the next generation of scientists, mathematicians, and engineers who will sustain the nation's global competitiveness in science and technology.

PROJECT CONTRIBUTIONS TO PART MEASURES

PART MEASURE – Educator Professional Development (Short-duration):
Percentage of elementary and secondary educators who obtain NASA content-based education resources or participate in short-duration NASA education activities and use NASA resources in their classroom instruction.
3,515 unique teachers participated in SoI short-duration (two days or less) professional development opportunities in FY 2010.

PART MEASURE – Educator Professional Development (Long-duration):
Percentage of elementary and secondary educators who participate in NASA training programs and use NASA resources in their classroom instruction.
568 unique teachers participated in SoI long-duration (more than two days) professional development opportunities provided by the Aerospace Education Services Program (AESP) specialist in FY 2010.

PART MEASURE – Student Involvement: ***Number of elementary and secondary student participants in NASA instructional and enrichment activities.***
22,455 unique students from collaborative out-of-school learning activities hosted by state education stakeholders, NASA Field Centers, and education partners across the country, participated in SoI instructional and enrichment activities in the FY 2010 pilot.

PART MEASURE – Student STEM Career Interest: ***Percentage of students expressing interest in science, technology, engineering, and math (STEM) careers following their involvement in NASA elementary and secondary education programs.***
In FY 2010, 81.7% of respondents (1,122 out of 1,374) expressed an interest in STEM careers following their involvement in the SoI Pilot Project.

PART MEASURE - ***Cost per participant for NASA elementary and secondary education programs***
22,455 unique students and 4,083 unique educators participated in SoI educational programs in FY10. The cost per participant was $376.82.

IMPROVEMENTS MADE IN THE PAST YEAR
The Summer of Innovation project was piloted in FY 2010 as a new NASA initiative.

PROJECT PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION
Education Partners – Space Grant Consortium Awardees (ID, NM, MA, and WY); Contract Awardee, Paragon TEC, Inc.; Evaluation Contractor, Abt Associates, Inc; and Assessment Contractor, Booz Allen Hamilton.